From: PETERSON Jenn L
To: Robert Gensemer; Eric Blischke/R10/USEPA/US@EPA
Cc: Burt Shephard/R10/USEPA/US@EPA
Subject: RE: Perchlorate and froggies (new subject!)
Date: 09/15/2006 02:32 PM

I have not reviewed everything as Bob has done, but based on his review I would recommend using the 18 ppb number.

-Jennifer

-----Original Message-----
From: Robert Gensemer [mailto:rgensemer@parametrix.com]
Sent: Friday, September 15, 2006 2:05 PM
To: Blischke.Eric@epamail.epa.gov
Cc: PETERSON Jenn L; Shephard.Burt@epamail.epa.gov
Subject: Re: Perchlorate and froggies (new subject!)

OK. I've reviewed everything, including the USEPA AWQC for two other chemicals with endocrine or developmental impacts (atrazine and nonylphenol) to see if I can find some kind of precidence for what to do here. Bottom line for me is that if we consider developmental effects to be related to the measurement endpoints and important to the assessment, then we need to go with the LOEC of 18 ppb. One little warning with that, though, this 18 ppb value was the LOEC for tail resorption...the LOEC for forelimb emergence was lower at 5 ppb. Both were analytically verified in Goleman paper. Good paper.

Unfortunately, I could *not* find or verify Paul's LOEC of 0.059 ppm (59 ppb)...in fact, in his cover memo, there was a typo showing this to be a LOEC of 0.0059 ppm (5.9 ppb), but the chronic value was correct if it were 59 ppb as in the spreadsheet. Also, I'm quite sure there was an order of magnitude typo when he carried forward his ACR for Xenopus (both in the memo and spreadsheet it changed from 20,529 to 2059). So, bottom line, I am not comfortable at this point using Paul's suggested SCV of 200ppb. Too many numbers I can't confirm. If I'm missing something I'd gladly apologize to everyone, but I've been over this several times and keep reaching the same conclusion.

So...two choices. Either correct Paul's analysis, or select the LOEC of 18 ppb as our chronic SL value. I prefer the latter because it seems to match EPA's precidence, such as it is, for atrazine and nonylphenol. In both AWQC, they reviewed endocrine/developmental effects separately from the standard chronic effects of survival, growth, and reproduction. For nonylphenol, the endo/devel endpoints (mostly fish) were less sensitive than the chronic value, so they did not change the standard/calculated chronic value at all. For Atrazine, the endo/devel endpoints (all with froggies) were low enough to potentially change the chronic criteria, but EPA considered the conflicting studies too controversial to use them until new studies helped resolve things. Best I can tell, EPA would not have used the endo/devel endpoints in the chronic value or ACR calculations (as Paul did), but rather they would have simply lowered the final chronic value to match the endo/devel endpoint. This is why I support the 18 ppb value. Burt, what do you think??

I am also willing to recalculate Paul's analysis based on my own reading of the Goleman study. My first cut would be an SCV of 80 ppb, based on a corrected ACR for Xenopus of 37,167. I would like additional QA before I'm fully comfortable with that number. But quite frankly, I'm having trouble accepting an ACR based on comparing a standard acute to an endo/devel endpoint. The effects levels for each are *so* different for perchlorate based on the Goleman study, that I think it stretches the ACR concept past its breaking point.

-Bob

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Robert W. Gensemer, Ph.D.
Parametrix, Inc.
33972 Texas Street SW
Albany, OR 97321
T 541-791-1667, x-6510
F 541-791-1699
C 541-760-1511
rgensemer@parametrix.com
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>>> <Blischke.Eric@epamail.epa.gov> 09/15/06 11:15 AM >>>

I agree that we don't need the amphibian values. However, we do need a perchlorate value. My original plan for perchlorate was to use the Arkema value. Sean directed Arkema to use a value of 24.5 ug/l for perchlorate. The direction to Arkema indicated that this was a chronic values. However, after speaking with Harry Craig, it appears that the 24.5 ug/l was a human health value.

EPA's 2002 Perchlorate Environmental Contamination: Toxicological Review and Risk Characterization Based on Emerging Information (External Review Draft - January 2002) calculates a secondary chronic value using the methodology of Suter and Tsao of 600 ug/l. However this value does not include a recent Goleman et. al. study that shows developmental effects as low as 18 ug/l. Based on a conversation I had with Jennifer, I believe that Sean looked at the Goleman value and saw that it was close to the 24.5 value and just told Arkema to use 24.5. Paul Seidel from DEQ has calculated a secondary chronic value of 200 ug/l using the Goleman et. al. study along with other studies and the Suter and Tsao

methodology. No one likes the Dean et. al. value of 9300 proposed by the LWG.

So, my question to you is whether to go with the Goleman et. al. study specically and derive a value (e.g., 18 ug/l) or Paul's derived value of 200 ug/l. I have attached a write up from Paul, Paul's methodology, the Goleman paper and a link to the 2002 perchlorate document. Let me know what you think. This is the last outstanding issue on the eco water SLs.

Thanks, Eric

http://cfpub2.epa.gov/ncea/cfm/recordisplay.cfm?deid=24002

(See attached file: TierIIValueDevelopment.doc)(See attached file: TierIIaquaticValues.xls)(See attached file: PerchlorateEcoTox-Goleman2002a.pdf)